

WHAT IS CLAIMED IS:

1. A method for reducing the size of an enlarged body structure comprising:

5 positioning an electrode terminal adjacent to an enlarged body structure; and
applying high frequency voltage between the electrode terminal and a return electrode, the high frequency voltage being sufficient to volumetrically remove at least a portion of the body structure.

10 2. The method of claim 1 wherein the enlarged body structure comprises a turbinate within the patient's nose.

15 3. The method of claim 1 further comprising advancing at least a distal end of the electrode terminal into a space vacated by the removed portion of the turbinate.

4. The method of claim 3 further comprising applying thermal energy to the body structure to form a scar around the space.

20 5. The method of claim 1 further comprising axially translating the electrode terminal to form a hole through at least a portion of the body structure.

25 6. The method of claim 1 further comprising transversely translating the electrode terminal relative to the body structure to form a channel along the outer surface of the body structure.

7. The method of claim 1 further comprising:
introducing at least a distal end of an electrosurgical catheter into the patient's nose; and
positioning the distal end of the catheter in close proximity to the turbinate.

30 8. The method of claim 1 further comprising:
introducing at least a distal end of an electrosurgical probe through a nostril into the patient's nasal cavity; and

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positioning the distal end of the probe in close proximity to the turbinate.

9. The method of claim 1 further comprising an electrode array including a plurality of electrically isolated electrode terminals.

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10. The method of claim 1 wherein the electrode terminal comprises a single electrode at or near a distal end of an electrosurgical probe.

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11. The method of claim 1 wherein the return electrode is located on an external surface of the patient's body.

12. The method of claim 1 wherein the return electrode and the electrode terminal are both located on the electrosurgical probe.

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13. The method of claim 2 further comprising delivering electrically conductive fluid into the nose to substantially surround the electrode terminal with the electrically conductive fluid.

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14. The method of claim 2 further comprising delivering electrically conductive fluid into the nose to generate a current flow path between the return electrode and the electrode terminal.

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15. The method of claim 1 further comprising aspirating fluid from the target site during the removal step.

16. The method of claim 9 further comprising independently controlling current flow from at least two of the electrode terminals based on impedance between the electrode terminal and a return electrode.

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17. The method of claim 1 further comprising applying sufficient voltage to the electrode terminal in the presence of the electrically conducting fluid to vaporize at least a portion of the fluid between the electrode terminal and the tissue at the target site.

18. The method of claim 17 further comprising accelerating charged particles from the vaporized fluid to the tissue to cause dissociation of the molecular bonds within the tissue structures.

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19. The method of claim 5 wherein the hole has a diameter less than about 2 mm.

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20. The method of claim 5 wherein the hole has a diameter less than about 1 mm.

21. A method for treating turbinates comprising:
positioning an electrode terminal in contact with or in close proximity to the turbinate; and

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applying a sufficient high frequency voltage difference between the electrode terminal and a return electrode to form a void within the turbinate.

22. The method of claim 21 wherein the void is a hole having a maximum lateral dimension of about 2.0 mm.

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23. The method of claim 21 wherein the void is a channel extending along an outer surface of the turbinate.

24. The method of claim 21 further comprising applying a sufficient high frequency voltage difference between the electrode terminal and the return electrode to form a plurality of voids within the turbinate.

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25. The method of claim 21 further comprising, during the applying step, translating at least a portion of the electrode terminal relative to the turbinate.

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26. An apparatus for applying electrical energy to an enlarged body structure at a target site within or on a patient's body, the apparatus comprising:

an instrument having a shaft with a proximal end portion and a distal end portion and an electrode terminal disposed near the distal end portion of the shaft;

a return electrode; and

5 a high frequency power supply coupled to the electrode terminal and the return electrode for applying a voltage difference therebetween, the voltage difference being sufficient to volumetrically remove at least a portion of an enlarged body structure to reduce a size of the enlarged body structure.

10 27. The apparatus of claim 26 further comprising a fluid delivery element defining a fluid path in electrical contact with the return electrode and the electrode terminal to generate a current flow path between the return electrode and the electrode terminal.

15 28. The apparatus of claim 26 wherein the distal end portion of the shaft is sized for delivery into a paranasal sinus of the patient.

20 29. The apparatus of claim 26 wherein the tissue is selected from the group comprising swollen tissue, turbinates, polyps, neoplasms, cartilage and swollen mucus membranes lining an inner surface of the nasal cavity.

30 30. The apparatus of claim 26 wherein the distal end portion of the shaft has a diameter less than 2 mm.

25 31. The apparatus of claim 26 wherein the distal end portion of the shaft has a diameter less than 1 mm.

32. The apparatus of claim 26 wherein the return electrode forms a portion of the shaft.

30 33. The apparatus of claim 26 further including an insulating member positioned between the return electrode and the electrode terminal, the return electrode being sufficiently spaced from the electrode terminal to minimize direct contact between

the return electrode and a body structure at the target site when the electrode terminal is positioned in close proximity or in partial contact with the body structure.

34. The apparatus of claim 27, wherein the return electrode is a tubular member and the fluid delivery element comprises an axial lumen coupled to the return electrode, the axial lumen forming at least a portion of the fluid path and having an outlet in fluid communication with the electrode terminal.

35. The apparatus of claim 27 wherein the fluid delivery element comprises a fluid tube extending along an outer surface of the shaft, the tube having an inlet positioned proximal to the return electrode, wherein the return electrode is spaced proximally from the electrode terminal.

36. The apparatus of claim 27 wherein the fluid delivery element comprises a fluid supply instrument separate from the electrosurgical probe.

37. The apparatus of claim 27 wherein the electrode terminal comprises an electrode array disposed near the distal end of the shaft, the array including a plurality of electrically isolated electrode terminals disposed over a contact surface.

38. The apparatus of claim 27 wherein the electrode terminal comprises a single active electrode disposed near the distal end of the shaft.

39. The apparatus of claim 37 further comprising a plurality of current limiting elements each coupled to one of the electrode terminals for independently controlling current flow to each of the electrode terminals to inhibit power dissipation into the medium surrounding the target site.

40. The apparatus of claim 26 further comprising a fluid aspiration element for aspirating fluid from the target site.

Table 1. Mean values of the variables measured during the three trials